

Considerable damage was done to buildings, &c. 18th, Burton, Washington Co., Texas, severe wind-storm at 7 p. m.; a two-story frame building blown into fragments. On the 16th, at Red Bluff, Cal., after a severe thunder-storm, attended by hail, a water-spout was observed, preceded by a low, rumbling noise; the stream of water was distinctly visible and continued for about 15 minutes, when it gradually disappeared. This occurred over the open country, and caused a stream of water, 10 to 15 feet deep, in a ravine where water is unknown, except during heavy rains.

## VERIFICATIONS.

*Indications.*—The detailed comparison of the tri-daily weather indications, with the telegraphic reports for the succeeding twenty-four hours, shows a general percentage of omissions of 0.3 per cent., and of verifications of 87.2 per cent. The percentages of verifications for the four elements have been: Weather, 90.9; wind, 83.3; temperature, 89.2; barometer, 85.3. The percentages of verifications by geographical districts have been: New England, 90.0; Middle Atlantic States, 86.8; South Atlantic States, 85.0; East Gulf States, 86.7; West Gulf States, 87.6; Lower Lake Region, 85.7; Upper Lake Region, 87.6; Tennessee and the Ohio valley, 88.6; Upper Mississippi valley, 86.7; Lower Missouri valley, 87.2.

Of the 3,588 predictions that have been made, 77, or 2.2 per cent., are considered to have entirely failed; 105, or 2.8 per cent., were one-fourth verified; 387, or 10.8 per cent., were half verified; 397, or 11.0 per cent., were three-fourths verified; 2,622, or 72.8 per cent., were fully verified, so far as can be judged from the weather maps.

*Cautionary Signals.*—During the past month 251 Cautionary Signals have been displayed at 47 stations on the Gulf and Atlantic coasts and on the Lakes, of which 219, or 87.2 per cent, were reported verified within 100 miles of the station. Two signals were ordered up "late" and one was ordered down too soon. Forty-eight cases of high winds, where no signals were displayed, have also been reported from these stations.

*Sunsets.*—The characteristics of the sky, as indicative of approaching fair or foul weather, have been observed daily at all regular Signal Service stations. Reports from 102 stations show 63 blank or doubtful cases; for the remaining 2997 cases; 2515 (or 83.9 per cent.) were followed by the anticipated weather.

## NAVIGATION.

*Stages of Water in Rivers.*—In the table on chart No. III are given the highest and lowest readings on the Signal Service river-gauges, and dates of same, from which it will be seen that the rivers generally rose towards the end of the month, the highest readings occurring from the 23rd to the 30th. With regard to the close of navigation on rivers and lakes, the following notes are to hand: Red River of the North was frozen over at Pembina on the 5th, and navigation north of Pembina was generally closed after the 9th, but at end of month the river was reported still open at several places. Lake Superior, November 12th, steamer Ontario sailed from Duluth on her last trip; 28th, Marquette, last vessel of season left. Missouri River, Bismarck, 8th, heavy ice in river, navigation about closed on the Upper Missouri; 28th, navigation closed at Bismarck; 29th, river frozen over; Yankton, 11th, ice in river, 29th, frozen over; Omaha, 30th, floating ice commenced to gorge above bridge; Atchison, Kan., 30th, ice gorge—river closed; Leavenworth, 29th, river filled with floating ice, partially frozen over. Upper Mississippi, St. Paul, 6th, floating ice, 27th, closed, 30th, frozen over; La Crosse, 26th, floating ice—navigation closed; Dubuque, 29th, floating ice, 30th, river gorged; Davenport and Burlington, 29th, floating ice, first of season, 30th, navigation closed; Keokuk, 29th, floating ice, canal frozen over, 30th, river full of floating ice. Illinois River, La Salle, 30th, River and Canal frozen over. Rock river, Ill., at Rockford, 6th, frozen over. Lake Ontario, Rochester, 21st, navigation closed. Red River, Shreveport, navigation during entire month good for largest boats.

*Special High Tides* have prevailed throughout the month along the Atlantic coast. Nov. 2d, Ocean Beach, N. J., inundated and, high tides were reported generally from New Jersey to Maine; at Providence, R. I., and New London, Conn., trains were delayed and damage done to shipping; at Eastport, Me., the wharves were damaged. Portsmouth, N. C., reports remarkably high tides throughout the month. Buffalo, Nov. 2d, high tide, flooding lower portion of city. Chicago, Nov. 8th, lake-front much damaged by high tides; boat-houses demolished and several schooners wrecked.

*Special river reports.*—The channel of the Missouri river at Omaha still continues to approach the Nebraska shore.

## TEMPERATURE OF WATER.

*In General.*—The temperatures of water, as observed in rivers and harbors, are shown on the chart No. III.

*Maximum and Minimum Temperatures.*—The highest maxima have been: 84° 2 at Key West; 73° at Galveston; 71° 5 at Charleston; 71° at Jacksonville; 70° at St. Marks and Shreveport. The lowest minima have been: 30° at St. Paul; 31° at Keokuk and La Crosse; 32° at Yankton and Omaha; 33° at Alpena; 34° at Sandusky and Toledo; 36° at Chicago, Detroit, Grand Haven, Marquette and St. Louis.

*Ranges of Temperature*—The least ranges have been: 3°.5 at Eastport; 4°.5 at Baltimore; 6° at Wilmington and Portland, Me.; 7°.5 at New York. The largest ranges have been: 25° at Galveston; 22° at Keokuk; 19° at Toledo and Augusta; 18° at Sandusky and Savannah.

## MISCELLANEOUS PHENOMENA.

**BIRDS.**—*Blackbirds* were seen at Mt. Sterling, Ill. 6th, flying at New Smyrna, Fla., 23rd; millions made their appearance at Decatur, Ala., from 14th to 17th; seen at Oregon, Mo., 5th, 8th, 12th, flying NE. 9th. *Swallows*, last seen at Somerset, Mass., 8th. *Snow-birds*, seen flying about New Bedford, Mass., 6th. *Crows*, flying S. Bellefontaine, Iowa, 10th. *Pelicans*, flying SW., Indianola, 10th. *Blue-birds*, were seen at New Bedford, Mass. 4th. *Cranes*, flying S., Baxter Springs, Kan., 5th; Clear Creek, Neb. 2nd; Fayette, Miss., 10th; Fayette, Miss., 2nd. *Robins*, last heard, Ft. Madison, Iowa, 12th; flying N., Belmont Farm, Tex. 22nd; first seen at Fayette, Miss., 16th. *Ducks*, plentiful at Milford, Ind., 10th to 22nd; flying S., Monticello, Iowa, 23rd; Cairo, Ill., 29th; Vicksburg, Miss., 9th; flying NE. Oregon, Mo., 4th. *English Sparrows*, seen at Fall River, Mass., 26th. *Geese*, flying S., Empire City, Kan., 1st; Boonsboro, Iowa, 3rd; Cresswell, Kan., 3rd; Guttenburg, Iowa, 5th; Baxter Springs, Kan., 5th; Monticello, Iowa, 23rd; large flocks, New London, Conn., 10th; Springfield, Mass., 16th; Cape Lookout, N. C., 20th; Davenport, Iowa, 4th; Vicksburg, Miss., 9th; Corsicana, Tex., 9th; Mechanics Falls, Me., 7th; Fall River, Mass., 14th; Clear Creek, Neb., 2th, 5th, 8th, 14th, 29th; Hulmeville, Pa., 23th; Chepachet, R. I., 17th; Belmont Farm, Tex., 10th; Woodstock, Ver., 10th; New Bedford, Mass., 14th; N. Southington, Conn., 10th; Walde, Tex., 28th; Oregon, Me., 18th; plentiful at Milford, Ind., 10th to 22nd; flying about Mt. Desert, Me., 10th. *Geese*, flying NW., Mt. Sterling, Ill., 16th; NE., Oregon, Mo., 4th; E., Nashville, Tenn., 26th; SE., Visalia, Cal., 5th.

**INSECTS.**—*Butterflies*, flying about 3rd, St. Meinrad, Ind. *Butterflies*, seen at Alto Vista, Va., 15th. *Grasshoppers*, seen at Hulmeville, Pa., 15th. *Frogs*, singing at Milford, Ind., 10th to 22nd.

**BOTANICAL.**—*Dandelions* in bloom, Frechold, N. J., 29th; Tiego, Pa., 29th. *Hedges* green at Independence, Kan., 5th. *Strawberries* in bloom, Independence, Kan., 5th. *Sweet corn* matured planted August 5th, New Bedford, Mass., 5th. *Roses* in bloom in the garden, New Bedford, Mass., 16th. *Violets* in bloom, New Bedford, Mass., 29th. *Bean* and *pear* in bloom the second time. *Lettuce*, the second crop, Wappinger's Falls, N. Y., 3d. *Strawberries* in bloom, 5th, and *Violets* and *Whortleberries* on the 15th, Alto Vista, Va.

*Polar Bands* on the 24th, Nashville, Tenn.: 11th, 17th, Guttenburg, Iowa; 3d, 16th, 17th, 23d, 26th, Tabor, Iowa; 5th, 13th, 17th, 28th, Gardiner, Me.; 9th, Northport, Mich.; 4th, 23th, Wytheville, Va.; 18th, Vicksburg, Miss.

*Smoke.*—7th, New London, Conn.; 18th, Augusta, Ga.; 17th, Rochester, N. Y.; 1st, Detroit, Mich.; 11th, 12th, 13th and 14th, Bismarck, Dak.; 23d, St. Paul, Minn.; 2d and 10th, Salt Lake City, Utah; 14th and 16th, Fort Gibson, Indian Ter.; 13th, 14th, 15th, 16th, 17th and 23d, Fort Sill, Indian Ter.; 1st 8th, 24th and 30th, Sacramento, Cal.

*Prairie Fires.*—9th, Bismarck, Dak.; 5th, 6th, 26th, 27th and 28th, Dodge City, Kan.; 5th, 7th, 9th, 10th, 12th, 14th to 18th, 22d and 23d, Fort Sill, Indian Ter.; 16th, Fort Lyon, Cal.; 6th, Fort Pembina, Dak.; 11th, Ft. Larned, Kan.; 1st to 12th, 14th to 17th, 21st to 37th, Cresswell, Kan.; 26th, 27th, Eagle Pass, Tex.

*Earthquakes* have been reported as follows; on the 4th, earthquake shocks were felt over an extensive area, including New York, New England and a portion of Canada as follows. In *New York*, at Albany, 1:55 to 2 a. m., two distinct shocks, noise quite loud, ceilings cracked; Palermo, 2 a. m., severe shock; Adams, 2 a. m., shock lasting one minute; Geneva, 2 a. m., light shock; Dudley Observatory, 1:53 a. m., several shocks lasting 40', first shock lasted 10' and after an interval of 30' another lighter one was felt; Antwerp, shook buildings, and was accompanied by a roaring sound, movement from S. W.; Saratoga, shock most severe on west side of village, dishes, windows and mirrors broken; previous to shock, wind blowing almost a gale; it then suddenly ceased, and for several seconds the silence was painfully quiet, similar to that which usually precedes a cyclone; after the shock the wind rose again; Auburn, vibrations lasting several seconds; damage done to window-panes and china; ceiling of house cracked; Troy, atmosphere after the shock became very close, with slight sulphurous odor; Watertown, 2 a. m., shock accompanied by low rumbling sounds; Plattsburg Barracks, 1:55 a. m., slight shock, lasting 15', W. to E.; Madison Barracks, 2 a. m., shock lasting 15', N. to S.; Cambridge, 1:55 a. m., slight shock, lasting a few seconds; people awakened and buildings shaken; Glen's Falls, Lake George and Schuylerville, 2 a. m., slight shock, with loud rumbling noise, shaking buildings and breaking crockery; at Utica, and along the Utica and Black River R. R., 2 a. m., distinct shocks; Whitehall, 2 a. m., severe shock; many ceilings were cracked; Ogdensburg, 2 a. m., heavy shock, passing W. to E., lasting over one minute; Cape Vincent, windows and glasses shaken; at Port Henry, Ausable Forks, Clayton, Morristown, Carthage and Louisville, shocks were distinctly felt. *Canada*, Montreal, 1:49 a. m., severe shock, lasting 20'; motion W. to E.; buildings trembled violently; monuments swayed perceptibly; St. John's, Quebec, 1:55 a.